

Name of the Student: _____

Max. Marks : 16 Marks

Time : 16 Minutes

Q1.

Iron is an important element in living systems. It is involved in redox and in acid–base reactions.

- (a) Explain how and why iron ions catalyse the reaction between iodide ions and $\text{S}_2\text{O}_8^{2-}$ ions. Write equations for the reactions that occur.

(5)

- (b) Iron(II) compounds are used as moss killers because iron(II) ions are oxidised in air to form iron(III) ions that lower the pH of soil.

- (i) Explain, with the aid of an equation, why iron(III) ions are more acidic than iron(II) ions in aqueous solution.

(3)

- (ii) In a titration, 0.321 g of a moss killer reacted with 23.60 cm³ of acidified

0.0218 mol dm⁻³ K₂Cr₂O₇ solution.

Calculate the percentage by mass of iron in the moss killer. Assume that all of the iron in the moss killer is in the form of iron(II).

(5)

- (c) Some sodium carbonate solution was added to a solution containing iron(III) ions. Describe what you would observe and write an equation for the reaction that occurs.

(3)

(Total 16 marks)